

# National Cheng Kung University

## Modular Course 2020 Summer Program

太陽能電池基本理論與實作

Solar cells-fundamentals and fabrication

Instructor	Affiliation	Graduation (Ph.d.)	
陳昭宇	NCKU Department of Photonics	École polytechnique fédérale de Lausanne (EPFL)	
Course Type	Course Credit	Student Size (Maximum)	Notice
Lab	1.5	15	<b>Not available for students who have taken the Solar Cells course of department of photonics.</b>

Student Background

College of Science 、Institute of Technology 、College of life science 、College of Electrical engineering and Computer Science 、College of Medical 、College of Planning and Design

Format of The Course

Lecture 15 % 、Workshop 70 % 、Discussion 15 %

Grading Policy

Projects 50 % 、Experimental operation 30 % 、Participation 20 %

Evaluation:

A written report shall be submitted within one week after the course.

The content can be based on the discussions of relevant scientific literature together with the experimental results.

Code of Conduct for The Course

None

Course Description

We will start with the fundamentals of solar energy conversion from the viewpoints of physical chemistry and materials perspective. After understanding the device physics of solar cells, we will perform solar cell fabrications and characterizations. The focus of this course will be next generation PV technologies such as dye-sensitized solar cells and perovskite solar cells. Moreover, we will use various tool such as solar simulator and IPCE measurement for analyze the power conversion efficiencies.

Timetable and Syllabus

Period	Timetable	Syllabus
8/24(MON)	9:00-17:30	Introduction to solar cell physics and fabrication process.
8/25(TUE)	9:00-17:30	Fabrication of solid-state dye-sensitized and perovskite solar cells
8/26(WED)	9:00-17:30	Fabrication of solid-state dye-sensitized and perovskite solar cells
8/27(THU)	9:00-17:30	Materials characterization and device measurements
8/28(FRI)	9:00-17:30	Data analysis and discussions

# National Cheng Kung University

## Modular Course 2020 Summer Program

### Goal of The Course

1. **Solar Cell physics**
2. **Fabrication and characterization of Solar cells**
3. **Team work, communication and coordination**

### The Importance, Cross-Over Disciplinary and Contemporary of The Curriculum

**Solar cell is an interdisciplinary technology involving physics, chemistry and materials sciences. In this course, we will briefly explain the fundamental process of solar cells both theoretically and experimentally. Participants will be able to fabricate and measure the solar cells devices (mainly the novel PV devices such as dye-sensitized and perovskite solar cells)) made from themselves.**

### Remarks

**Classroom : Cheng-Kung Campus Multi-Purpose Bldg 48418(4th Floor)**